search (5%) and other medically related activities (4%).

COMPARISON OF SPECIALISTS' AND GENERAL PRACTITIONERS' TIME DEVOTED TO PATIENTS' SERVICE

General practitioners devote a much greater proportion of their time to patient care on a fee-for-service basis than do specialists. On the other hand, the average specialist spends 20.7% of his available time on administration, teaching or research.

Because the survey is incomplete it must be clearly understood that the conclusions derived therefrom are preliminary. A further report will be issued when the survey is considered complete.

I would like to acknowledge the excellent statistical correlation carried out by Mr. Guy Clarkson and the other members of the C.M.A. Secretariat, especially Mr. B. E. Freamo.

How to Use a Medical Census

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THERE are several uses for a medical census which will be discussed, but at this moment the best use of such a census is that it made it possible for me to be invited to attend the 100th Anniversary of your Canadian Medical Association and the Conference on Medical Care Insurance and Medical Manpower.

Just a little over two years ago, the University of Oklahoma Medical Center undertook a reassessment and definition of its community responsibilities. Foremost and to the greatest extent, we felt that our place in the scheme of things was to teach and train physicians and other health workers to go out into the state to provide this service for the people rather than for the Medical Center and its staff to provide the service.

But where do you start when you have been travelling a well-marked, time-worn smooth course and then take suddenly off on a completely new tangent? You ascertain where you are now!

Therefore, we started phase I toward our new goal. In co-operation with appropriate public and voluntary health agencies, we began a statewide inventory of the health science personnel now serving the people of Oklahoma. The objective was to define the state and community needs by: (1) the identification of the number, ages, types of practice and locations of physicians and allied health personnel now in the state, (2) the identification of the deficiencies, quantitatively and qualitatively (where they are, where they are not, and who needs what!).

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The second phase provides for projections of current and anticipated needs based on: (1) the results of the study; (2) the needs and expectations of the public; (3) the needs and expectations of the professions; (4) the needs of the university, and (5) the social and economic forces at work.

The third phase is to re-evaluate the medical school curriculum and hospital training programs on the basis of documented needs and shortcomings. In the hope of alleviating some problems, one plan is to establish an appropriate undergraduate and graduate education program in family medicine, and to strengthen the allied health programs by establishment of a School of Allied Health Sciences.

To do all this, leadership, workmanship, consultation and co-operation of the medical profession are the most essential requirements. The quality of health care—and this involves the number, kinds, and effectiveness of health manpower—is primarily the responsibility of the providers themselves. Indeed, it is their prerogative, for in many areas, only the health professions have the competence to establish standards of effective care. They need to determine what education and training is essential to accomplish this—an occasional airline passenger is not qualified to judge the competence of the pilot.

With this basic fact established, we obtained approval, support and co-operation from the Oklahoma State Medical Association in guiding and conducting the health manpower census.

The matter of health and medical care is one of vast complexity. There are no fixed answers (nor will there be) to many of the questions involved. Neither is medical practice static, but rather it is changing daily, almost to the point

Canad. Med. Ass. J.
Dec. 23 and 30, 1967, vol. 97

of revolution. The public feels, whether justifiably or not, that the medical profession holds a golden wand, and that by a simple waving of it, humanity can be cured of its ills—thus providing a heaven on earth, free from suffering and disease.

Behind the political leaders stand "their" public—the politician who really follows the crowd until he hears what is being yelled for, and then runs around in the front to lead the people on to victory. These political leaders expect immediate results, ones that meet their perceptions of the populace needs, their ideas about economics, their conception of quality and their criteria for relevance. Whether these perceptions and criteria are reasonably attainable with the available health professions is, of course, pure conjecture!

All too frequently, in attempts to arrive at solutions for controversial and difficult problems, whether economic, scientific or social, the solution is based on *methods* when experts are consulted, and on *defects* when the rest of society takes an active leadership part. The health-manpower problem is no exception. Now it becomes a crash program, and everybody is getting into the act; each has his own pat answer. My motto is somewhat different. I have a sign in my office —"Do you have a solution to the problem, or are you part of it?"

The size of the new challenges, the rapidity with which they have come about, and the expectations of prompt results would give anyone pause, even if the required resources of men, money and facilities were at hand and ready. Since they are not, the current feeling of crisis is predictable. In our country, and I presume in yours, too many programs, facilities and hand-outs have been provided without the necessary assessment and provision of the number, quality and kinds of health personnel required.

Since recorded history, every country has had a shortage of health manpower. Supply never seems to be able to keep up with demand, because as an anticipated level of medical manpower is reached, new factors intervene to postpone effective fulfilment of demand. As an illustration, modern medical advances with antibiotics have been responsible, to the greatest extent, in creating the tremendous increase in geriatric problems. Problems beget problems and solutions beget solutions.

Workable answers will not be found if they are sought within the precepts of the so-called population explosion. The size of the health manpower problem should not be measured solely by the size of the population, but rather by dimensions of the actual health needs of the population—some of which, obviously, are enlarged by size alone.

In the use of medical census, you cannot go by numbers alone. There is need for demographic, economic, vital statistics, hospital admissions and many other types of data. For years and even today, the "physician-population ratios" and "health manpower projections" have been based on isolated and number-by-number head counts, rather than by seeking original data in the local communities at the point of contact in patient care. These ratios and projections have been and are still being used as the basis for health planning. They are at best only a preliminary sort of estimate of needs, rather than realistic, objective and valid baselines for the determination of health manpower resources. These estimates can be useful as crude first approximations if they are viewed within the context of appropriate community and health professional decision making.

As an illustration, from one part of our survey it was revealed that one county of some 9000 people in our state had one physician, who is 81 years old. By car, the nearest medical centre is 45 minutes away; 40 minutes in good weather and if the dirt road is passable. As it has one of the highest per capita incomes in the state, economics has not been a deterrent to the provision of local medical care. Eleven per cent of its population is 65 years and over, and a high percentage of the population has voluntary health insurance. As a result, the Oklahoma University Medical Center is working with this community to provide the number and types of physicians and other health personnel and facilities necessary in the hope of reducing some of its documented medical problems.

I used a similar idea years ago in my own practice. Oklahoma City is divided by a so-called river, although most of the time it consists of only a trickle. In assessing the future, I looked at the past and present. Fifty per cent of my obstetrical patients were from south of the river. Then, I analyzed the private obstetrical deliveries which had taken place in Oklahoma City in the previous five years and found that 50% were from south of the river. That jibed, but then there were 35 obstetrician-gynecologists north of the river and not even one south. So I moved my office, and it paid off for me, besides providing better service to the patients.

A medical census should be performed in close proximity and association with the people providing medical care. The results should not be broken down as to nation, region, state, province and finally medical trade area; this is like building a skyscraper from the top down. In the

translation up or down to a national scope, many false, misleading and essential facts are lost.

The necessity for the proper utilization of the various kinds of health personnel is constantly being fostered, so that each "helping person" provides as much help as he is competent to provide and does not waste time performing tasks that can be done as well by others. It is a waste of scarce health personnel if any perform tasks below the level for which they are trained, when there are others available to perform such work, and it is dangerous for any to perform tasks beyond their spheres of competence.

Our University Hospital is not much different from most hospitals—it is critically short of registered nurses and there is widespread use of a great number of so-called aides. In a recent study of eight of the nine wards of the hospital, covering three weeks of a work-sampling observation, it was found that the registered nurses (R.N.) were spending only 28% of their time on direct patient-care activities; also, 85% of bedside nursing care was being given by non-professionals, and for over 10% of the time these aides or orderlies were not occupied in any work. It revealed that nurses were being required to make decisions on the pharmacology of the medicines ordered, but the curriculum for their education had not included a course in pharmacology. The result was that the nursing staff for these wards was reduced by one R.N. per ward, requiring more utilization of the remaining nurses' talents, and a trained ward clerk was brought in to take over more of the duties which the R.N. had been doing, such as figuring out time schedules and linen orders. Also, 25% of the aides' and orderlies' positions were eliminated and pharmacology was reinstituted in the curriculum for the R.N.'s. This is the goal of a medical census—to gather pertinent facts and to analyze them with the goal of providing more and better manpower to help meet the demands for health care. The continuous evaluation of the use of manpower, accompanied by necessary changes and retraining, not only will provide additional manpower, but will result in the effective utilization of available health personnel which will help reduce the manpower shortages.

I must keep repeating that numbers on a computer are not the complete answer, because it is axiomatic that a computer does not think. If you put garbage in, you get garbage out.

Hoping to demonstrate the worthiness of a health census, we ascertained from one limited and totally incomplete source that there were 25,343 anesthetic claims filed in one year in the state of Oklahoma from 139 hospitals. Of these hospitals, 83 had physician-anesthesia service, and the rest (56) had nurse anesthetists. In the state of Oklahoma, we have only 74 anesthesiologists, and 23 other physicians who list themselves as anesthetists. Even this number could not possibly provide physician-anesthesia care. Therefore, we know that a great number of physicians give anesthetics without competent training, not even short courses. Therefore, this year the University of Oklahoma has instituted special short courses for practising physicians untrained in anesthesiology. The first part of this is a course of one week's duration for 12 physicians at the Medical Center. Later, the Medical Center instructors will go out to these physician-anesthetists' own hospitals and work with them for one day a week until the competence of these trainees to handle the problems they will encounter in their own environment has been ascertained. Normally, practising physicians are too busy to take the time off to travel to the Medical Center for long-drawn-out training, and the incomparability of the two environments of the Medical Center and the physician's own hospital has to be considered.

There is another problem which can be predicted by a medical census and to which the medical profession and colleges of medicine need to find the answer. For years, in many hospitals, there has been the question as to the areas of the practice of medicine accessible to general practitioners. The general surgeons say "stay out of my domain"; the internists and obstetrician-gynecologists say the same, and so on down the line. The one physician to whom many people relate has been shoved out, and a new concept of family medicine practitioner has been developed. However, what are the domains of the various classifications of physicians? Are specialists going to keep on growing and emerging into areas of scientific fields, developed from their own particular part-time interest, into a professional sub-group whose members practise exclusively in a well-defined field? Specialty societies were first formed by physicians with special interests, banding together for their own amazement at their new-found interest. Ostensibly, their motivation was to improve "standards", but the real reason was to gain prestige. The same pattern can be seen in new and developing specialty groups today.

The pediatric physician has been joined by subspecialists from a number of different areas of specialty medicine; there are pediatric surgeons, child psychiatrists and pediatric radiologists. As a result, the scope of general pediatrics has become so diluted that at the present time the possibility for the development and recruitment of general pediatricians is in grave doubt. Does the pediatric surgeon identify himself

Canad. Med. Ass. J.
Dec. 23 and 30, 1967, vol. 97

more closely with pediatrics or surgery? Does he remain a general surgeon with an interest in children, or does he regard himself as a specialist in children? The old process of division reappears, but now at the level of the specialties.

The subspecialties, like the specialties before them, are focused primarily on disease categorization. The more esoteric they become, the more clearly disease-orientated they tend to be. As medicine concentrates on advanced techniques and the use of interrelated skills, the specialists move farther away from the sick person, or one not really unhealthy but with a medical problem. The dilemma is one of the continuing advance of medical science while responding to an equally compelling human need for personal medical care.

In our medical census, we have found that almost all of our general practitioners list themselves as such, but with a particular interest. The same holds for a larger percentage of the internists and general surgeons. One generalist listed himself as such, but with special interest (and thus, an assumed competency) in internal medicine, general surgery, and obstetrics and gynecology, or saying it another way, "in the skin and its contents". The internists list themselves as such with subspecialties of hematology, cardiology, diabetes, and *ad infinitum*. The general surgeons list themselves as such with subspecialties in thyroid surgery, thoracic surgery, gynecology, plastic surgery, etc. Are these physicians really that narrow? Possibly they are kidding themselves, other physicians and the public that there is a great unmet need in these particular categories of medical care. If there is truly such a need, are the medical schools and postgraduate courses educating them in such a way that they will not know how to treat a patient who develops a mild run-of-the-mill complaint needing the skills of basic medical service while under their direct care? Is there an unmet need of enough cases to warrant this approach? A more detailed analysis of all factors of medical census is required rather than just the type of practice of a physician. This, for example, would include the number of thyroidectomies that were justified and whether or not the "superspecialist's" results were really better than the general surgeon's.

At present, the specialty groups appear to be in the forefront of recruitment, as their fields become more clearly divorced from general medicine and general surgery practice; in turn, general medicine and general surgery find themselves confined to a limited aspect of a whole general spectrum such as general medicine to internal medicine (whatever that means) and general surgery to abdominal surgery exclusive of the genitourinary tract. General competence in a wide specialty field is facing a battle of crossed swords similar to that faced between the specialists and general practitioners in the last few decades.

There are other factors to be considered in using a medical census for predictions. There are changes in disease patterns, technological advances, and social and organizational change.

It is axiomatic and mandatory that a medical census be fully cognizant of changes and advances in scientific and medical practice as well as social changes.

Technological changes affect health manpower demand. A number of years ago the practising physician had a hard time locating an ear, nose and throat specialist to treat a severe sinus, an abscessed tonsil, and other ailments requiring some special knowledge and/or technique. Many vacancies in resident training programs prevailed because in most instances this practice did not offer a challenge since antibiotics almost eliminated mastoidectomies. The men in this field who were in practice *were* older and swamped with work or slowing down.

A similar situation exists today—it is hard to find an available ear, nose and throat specialist, but for an entirely different reason. Owing to technological and scientific advances, such as the stapes mobilization, deep neck resections, and others, the ENT men are so busy helping the older hard-of-hearing patients to enjoy life again that they cannot be bothered with such mundane things as sinuses. However, now there is a relative over-supply of applicants for ENT residencies.

The same approach has to be used with obstetrics and gynecology. With the advent of "the pill" the whole aspect of practice of this specialty has been changed, and will be even more so in the future. Some of my colleagues have labelled me an "obstetrical drop-out" due to the pill. But along with the pill, the assertion is made by some that much of obstetrical prenatal care and even many deliveries can be done with less highly trained personnel. Is there the need for an increase in the total number of trainees in obstetrics and gynecology? I am no different than any other member of a specialty group; I believe that there is a need for an increased quantity of trained physician manpower, but not necessarily "superspecialists". But am I looking at this wholly objectively and unemotionally? A good continuous medical census will aid in the basic question of whether or not supply will equal or surpass the demand for obstetrician-gynecologists so that qualified physicians will be fully occupied to the extent that the public's health will best be served.

Of course, the knowledge of doctors' ages is essential for making future predictions on the change of supply. For example, what is the ratio of physicians in the 35- to 44-year-old age group to those in the 25- to 34-year-old group? We need to be aware of this because it may predict a greater shortage for say 1985 and then it will be too late to institute corrective measures.

A medical census, to be of full value, must be carried out continuously—no one shot of penicillin to cure all ills. There have to be refinements, changes of techniques and methods of analysis. Too many times, these one-time censuses have been performed. For example, a one-time survey of registered nurses in Oklahoma found that 23% of them were not working. Another survey conducted five years later revealed almost the same figure. However, were they the same group, what was the "in" and the "out" rate, what were the changes in the types of nursing being done, and so on down the line? A continuous survey would have the opportunity to answer these questions, and maybe help with some solutions.

What is the value of medical census? Very simply stated, it can be a process of attempting to assure that there will be enough health workers to meet, but not exceed, the effective economic demand for their services. Not only is health manpower planning important, it is urgent owing to the long lag in training of health professionals. Medical programs can be enacted at one session of a legislative body, hospitals can be built in months, but it takes at least a decade to educate and train a physician

The first step in health manpower planning is to start with what you have. It will do no good for either the medical profession or the overall planners to propose overwhelming crash programs to correct the health manpower problems by producing "warm bodies" of inferior education and training to provide a semblance of health care, or to completely redesign the system of providing it.

Projecting the supply of health workers forward to target dates 10 and 20 years in the future is a much more difficult task. The change of supply may be divided into losses or increases. Losses are primarily by retirement, death and migration. There is only one major source for new health professionals: the training school. It is not enough merely to take the number of graduates from each of the schools for the past 10 years and average them. One must search for trends and confer with educational authorities to see what plans are under way for increasing or decreasing the number of graduates.

There are many different methods of determining the demand for health workers. In clinical medicine, if there are many remedies for one disease, one assumes that not one of these remedies is really adequate. Such is the case in the "demand analysis" for health workers, because the demand has to be identified first.

The medical census should be subject to several conditions and restraints:

1. It should be conceptionalized and conducted by health leaders, most of whom are or have been on the firing line, assisted by many consultants and systems analysts, but not vice versa.

2. It should not be run and completely dominated by a research unit; but should be conducted by program and service personnel after orientation to the goals and methods of reaching them.

3. The examination should not be a one-time affair, but must be a continuing analytical and evaluation effort, productive of increasingly refined and dependable products and methods.

4. It should be obtained at the lowest health community level and the facts built up to an overall picture.

But the job should not be left solely to system analysts or to research specialists. Ultimately, the necessary work has to be done by health leaders and workers, operating in their specific organizational and community framework, with the assistance of different analytical specialists.

Many difficulties are encountered in evaluating and prognosticating for the provision of health care. Some of these arise from the failure to realize the rapidity with which new techniques, new scientific discoveries and new methods are available or will be available tomorrow, next week, next year or over the next decade. Who can predict what the practice of medicine is likely to be even 5, 10 or 20 years from now? The past can only provide a clue, and the present may only be able to reveal a trend, but before a look into the future will be of value, the past and present must be known. With all the scientific, technical and social changes appearing almost every day, the medical profession and medical educators are up against a monstrous job in trying to make sure that today's students and practitioners will be qualified to meet tomorrow's challenges.

Such an approach as a medical census is needed because health care is a social system. In order that the conclusions derived from evaluations will be valid for members of the health professions and the public, health leaders and their staffs must carry out the investigations and recommendations.